

CLAIMS:

1. A composition for degrading biofilm structure associated with cystic fibrosis and the debris associated therewith, the composition comprising:

5 an enzyme selected for its ability to dismantle the biofilm structure;

an anchor molecule coupled to an enzyme to form an enzyme-anchor complex, the anchor molecule being selected for its ability to attach to a surface on or proximal the biofilm structure;

10 wherein the attachment to the surface permits prolonged retention time of the enzyme-anchor complex where the biofilm structure and associated debris are present.

15 2. A composition as claimed in claim 1 wherein the enzyme is selected for its ability to degrade a colonizing matrix.

20 3. A composition as claimed in claim 1 wherein the enzyme-anchor complex is a fusion protein.

4. A composition as claimed in claim 1 wherein the enzyme-anchor complex is constructed using chemical synthesis techniques.

25 5. A composition as claimed in claim 1 wherein the enzyme-anchor complex contains alginate lyase to degrade the biofilm structure.

6. A composition as claimed in claim 1 wherein the enzyme-anchor complex further contains DNase to degrade debris which are byproducts of the degraded biofilm structure.

30 7. A composition as claimed in claim 1 wherein the enzyme-anchor

complex comprises an anchor having an alginate-binding domain.

8. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from elastase.

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9. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from a glycosyltransferase enzyme.

10. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from an alginate polymerase enzyme.

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11. A composition as claimed in claim 7 wherein the alginate-binding domain is a mannose binding lectin.

12. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from heparin.

13. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from fibronectin.

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14. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from Concanavalin A.

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15. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from a lectin.

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16. A composition as claimed in claim 7 wherein the alginate-binding domain is derived from a selectin.

17. A composition as claimed in claim 7 wherein the alginate-

binding domain is derived from the CD44 protein.

18. A composition as claimed in claim 1 further comprising an additional enzyme-anchor complex comprised of an enzyme selected
5 for its ability to act upon debris and byproducts associated with the biofilm structure degradation coupled to an anchor selected for its ability to attach to a surface on or proximal the biofilm structure.

10 19. A composition claimed in claim 18 wherein the enzyme-anchor complex is a fusion protein.

15 20. A composition as claimed in claim 18 wherein the enzyme-anchor complex is constructed using chemical synthesis techniques.

21. A composition claimed in claim 18 wherein the additional enzyme-anchor complex comprises an anchor having an alginate-binding domain.

20 22. A composition claimed in claim 18 wherein the enzyme-anchor complex contains a proteinase.

25 23. A composition as claimed in claim 18 wherein the enzyme-anchor complex has the capability to act on DNA.

24. A composition claimed in claim 23 wherein the enzyme-anchor complex contains DNase.

30 25. A composition claimed in claim 18 wherein the enzyme-anchor complex contains mucinase.

26. A composition claimed in claim 18 wherein the enzyme-anchor complex is a cell wall degrading enzyme.

27. A composition claimed in claim 18 wherein the enzyme-anchor
5 complex contains a glycosaminoglycan hydrolase.

28. A composition claimed in claim 18 wherein the enzyme-anchor complex contains a peptidoglycan hydrolase.

10 29. A composition claimed in claim 18 wherein the enzyme-anchor complex contains proteoglycan hydrolase.